<u>In the Claims</u>

This listing of claims will replace all prior versions and listings of claims in the application:

1 to 5.   (Canceled)

1   6.   (Currently Amended) The method of performing an N-point
2 radix-R Fast Fourier Transform in a data processing apparatus
3 having a data cache comprising the steps of:
4   comparing the data set of input data and twiddle factors with
5 the size of the data cache;
6   if said data set is smaller than said data cache, performing
7 said Fast Fourier Transform in $\log_R N$ stages on all the data set in
8 one pass; and
9   if said data set is larger than said data cache but smaller
10 than R times the data cache
11   dividing said input data into R continuous data sets
12   where each of said R continuous data sets fit within the data
13   cache;
14   disposing said input data into memory, each R continuous
15   data set in continuous memory locations with a space in memory
16   locations from an end of one continuous data set to a
17   beginning of a next continuous data set equal to the size of a
18   cache line;
19   separately and independently performing a first stage
20   radix-R butterfly computations on all the ~~the~~ R continuous
21   data sets thereby producing R independent intermediate data
22   sets in a first pass each of which fits within the data cache;
23   and
24   successively performing second and all subsequent stage
25   butterfly computations on each independent intermediate data

26   set in turn producing corresponding output data in second
27   passes.

1   7.   (Original) The method of claim 6, wherein:
2   said Fast Fourier Transform uses complex input data and
3   complex twiddle factors of M bytes each; and
4   said step of comparing the data set with the size of the data
5   cache compares the data cache size to 4 N×M bytes.

1   8.   (Original) The method of claim 6, wherein:
2   said radix-R is radix-2.

1   9.   (Original) The method of claim 6, wherein:
2   said radix-R is radix-4.

     10.   (Canceled)

1   11. (Original) The method of claim 6, further comprising:
2   if said data set is larger than R times the data cache
3   performing I initial stages of radix-R butterfly
4   computations on all the input data producing R independent
5   intermediate data sets, where I is the next integer greater
6   than $\log_{R}(D/C)$, D is the size of the data set and C is the
7   size of the cache; and
8   successively performing all subsequent stage butterfly
9   computations on each independent intermediate data set in turn
10   producing corresponding output data in second passes.